Human- versus Artificial Intelligence

Abstract

AI is one of the most debated subjects of today and there seems little common understanding concerning the differences and similarities of human intelligence and artificial intelligence. Discussions on many relevant topics, such as trustworthiness, explainability, and ethics are characterized by implicit anthropocentric and anthropomorphistic conceptions and, for instance, the pursuit of human-like intelligence as the golden standard for Artificial Intelligence. In order to provide more agreement and to substantiate possible future research objectives, this paper presents three notions on the similarities and differences between human- and artificial intelligence: 1) the fundamental constraints of human (and artificial) intelligence, 2) human intelligence as one of many possible forms of general intelligence, and 3) the high potential impact of multiple (integrated) forms of narrow-hybrid AI applications. For the time being, AI systems will have fundamentally different cognitive qualities and abilities than biological systems. For this reason, a most prominent issue is how we can use (and "collaborate" with) these systems as effectively as possible? For what tasks and under what conditions, decisions are safe to leave to AI and when is human judgment required? How can we capitalize on the specific strengths of human- and artificial intelligence? How to deploy AI systems effectively to complement and compensate for the inherent constraints of human cognition (and vice versa)? Should we pursue the development of AI "partners" with human (-level) intelligence or should we focus more at supplementing human limitations? In order to answer these questions, humans working with AI systems in the workplace or in policy making have to develop an adequate mental model of the underlying 'psychological' mechanisms of AI. So, in order to obtain well-functioning human-AI systems, Intelligence Awareness in humans should be addressed more vigorously. For this purpose a first framework for educational content is proposed.